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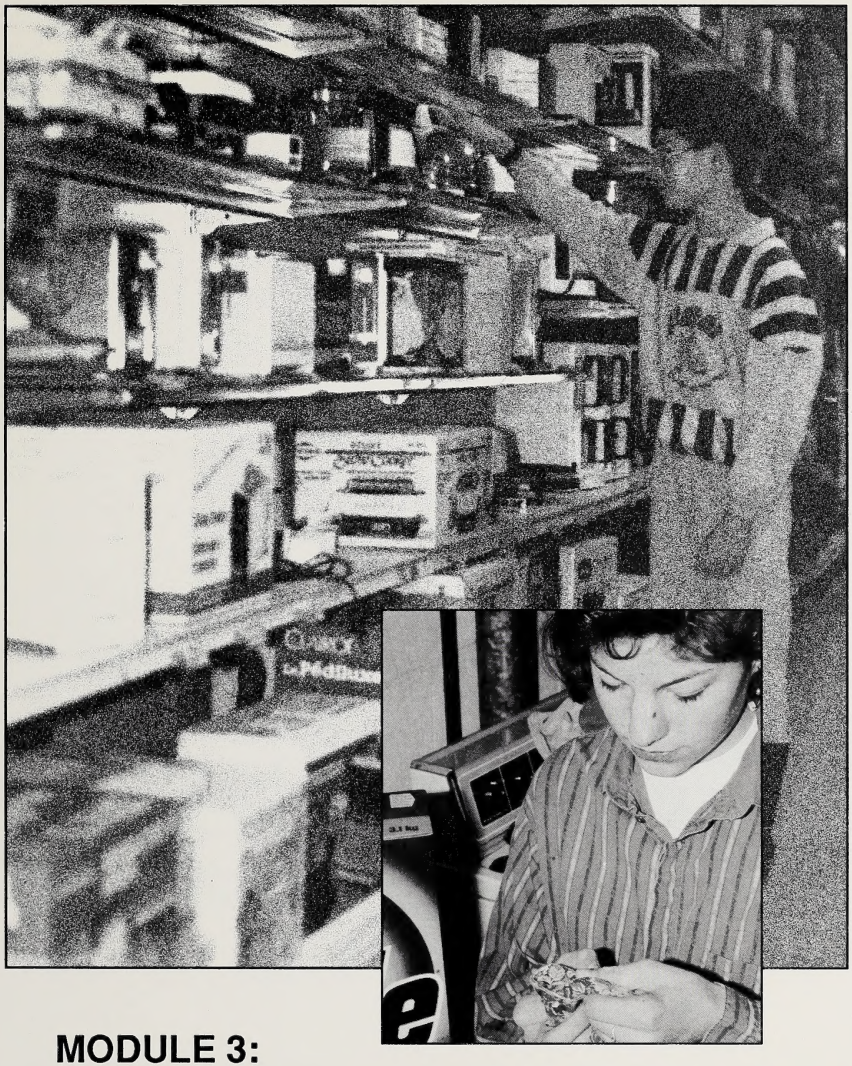

MODULE 3:

Consumer Product Testing

STUDENT SUPPORT GUIDE

Distance Learning

Alberta EDUCATION

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Science 8

Module 3

STUDENT SUPPORT GUIDE

Note to the Parent or Guardian

This Science Student Support Guide contains answers to activities in the accompanying Module Booklet. It should be kept secure by the parent or guardian if the student is under 16 years of age. Younger students should not have access to this Guide except under supervision.

This Student Support Guide does not contain the answers to the accompanying Assignment Booklet. The Assignment Booklet will be graded by the student's distance education teacher.

Science 8
Student Support Guide
Module 3
Consumer Product Testing
Alberta Distance Learning Centre
ISBN No. 0-7741-0251-9

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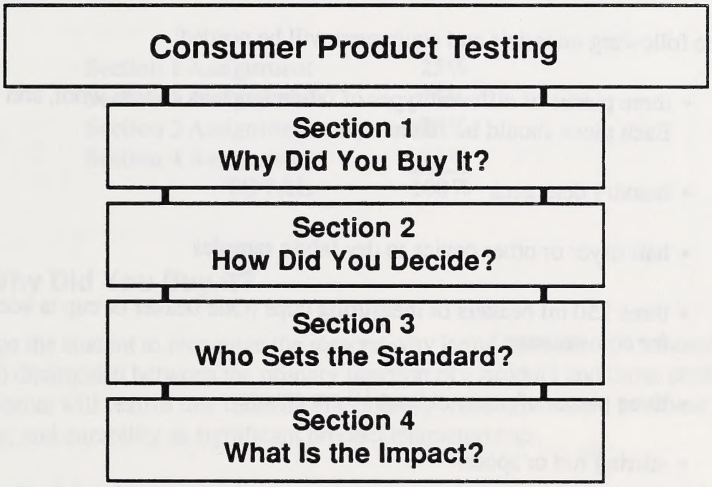
Module 3 – Consumer Product Testing: Overview

The major emphasis of this module is science, technology, and society.

This module is a study of the characteristics of consumer products, consumer product testing, and the role of consumer product standards. Students also learn to apply the process of decision making to consumer issues.



Media

Videocassettes may be available from your regional library service, ACCESS Network, or the LRDC.

The following videos, though not directly incorporated in any pathways, may be found useful:

Ecology, You and Your Environment: Look Back for Tomorrow!
Give & Take: We Choose-Scarcity and Social Decision-Making
Over-the-Counter Drugs: Smooth Talk & Small Print
Soap, Scents & the Hard, Hard Sell
Still Killing Us Softly
What About: Decision Making in Science
What About: Experimenting in Science
What's a Natural Resource?

Materials and Equipment

The following materials and equipment will be needed:

- three pieces of different types of fabric (such as cotton, wool, and nylon) Each piece should be 10 cm square.
- laundry detergent
- hair dryer or other device to dry fabric samples
- three 250 ml beakers or measuring cups (One beaker or cup is adequate, but three are suggested for convenience.)
- three pieces of paper at least 10 cm square
- stirring rod or spoon
- forceps or tongs
- ruler
- white paper
- additional materials and equipment to conduct the testing of a consumer product; requirements depend on student choice
- poster paper and felts, paints, or pencil crayons are suggested but not required

Resources

It is recommended, but not required, that the following are available to students:

- several store catalogues from stores such as Sears, Consumers Distributing, and Canadian Tire
- samples of consumer magazines such as *Canadian Consumer*, *Consumer Reports*, *Protect Yourself*, and *Consumer Digest*

Evaluation

Your mark in this module will be determined by your work in the Assignment Booklet. You must complete all assignments. In this module you are expected to complete four section assignments. The assignment breakdown is as follows:

Section 1 Assignment	**25%**
Section 2 Assignment	**25%**
Section 3 Assignment	**25%**
Section 4 Assignment	**25%**
TOTAL	**100%**

Section 1: Why Did You Buy It?

This section helps the student to recognize the reasons why items have been purchased. The student should be able to distinguish between the primary function of a product and those characteristics that are not. The students will realize that function is a primary reason to make a purchase and recognize safety, reliability, and durability as significant product characteristics.

The student will also have the opportunity to work with a decision-making model and to learn the skills necessary for making good consumer decisions

Section 1: Activity 1

1. Complete the table as follows.

   Make a list of ten items you have purchased with your own money. Then think about the reason why you made each purchase. If you find yourself saying you bought something because you wanted it, ask yourself "Why?," and it will lead to a more thoughtful answer.

   Items will vary. The following list will give you an idea of the possible reasons why certain items may have been purchased.

Item	Reason
• *pens, pencils, notebooks, felt pens*	• *for school*
• *cassette tapes or records*	• *enjoyment, my friends had it*
• *junk food*	• *fun to eat, wanted to share with friends*
• *clothes, jeans, runners*	• *needed clothes for school, my friends had it, I wanted the latest look, image*
• *concert tickets, amusement park*	• *entertainment, socialize, have fun with my friends*
• *sports equipment*	• *needed it to play*
• *mountain bike, CD player*	• *everyone else has them*
• *toothpaste, deodorant*	• *personal hygiene, it was on sale, you need those things*
• *particular brand names*	• *it's the latest, saw it on TV*

It is very important that the student knows the following concepts before going on to the next activity.

Key reasons why people buy things

- Their friends have them.
- Advertising is persuasive.
- The items are fashionable.
- People want the items.
- The items serve a purpose.

2. Select the three reasons that were the most common. For each reason, list the items that were purchased for that reason.

Answers will vary. Items might be grouped together because of their function, because they are used for entertainment, or because they are used to get social status.

3. What features do the items listed under each reason have in common?

Answers will vary greatly. Students may refer in their own way to reliability, safety, and durability. Items bought for status are likely stylish or fashionable.

Section 1: Activity 2

1. Make a quick list of **characteristics** that would attract you to buy the items illustrated.

Answers may vary but should include things such as cost, safety, durability, reliability, colour, style, size, fit, dollar value, and food value.

2. In question 1, which characteristics are important to the function of the product.

Possible answers:

- *safety, reliability, durability*

Colour and style are not likely related to the function.

3. Name an item that would have one of the following as its most important characteristic:

Possible answers:

a. **durability**

winter jackets, shoes

b. safety

food you eat, appliances

c. **reliability**

appliances, vehicles, watch, camera

d. proper fit

clothes, shoes, replacement parts

e. good **craftsmanship**

clothes, furniture

f. good value

all products

Section 1: Activity 3

1. Write down what the item was, describe the selection, and describe how you finally made your decision.

Answers will vary, but should include the name of the item, how the selection varied, and how the student went about choosing one for purchase.

2. When would you buy a high-quality item?

A high-quality item can be bought:

- *when it is supposed to last for a long time*
- *when you can afford the best without making other sacrifices*
- *when it is not likely to go out of style*
- *when high quality is necessary for its intended use, e.g. batteries for electronic flash*
- *when it receives constant wear or handling*
- *when special features are needed*

3. Give two examples of items that are often purchased with high quality in mind?

   Answers will vary. The examples could include furniture, cameras, stereo equipment, washers, and dryers.

4. Give two examples of items that could be purchased at a lower quality level?

   Answers will vary:

   - *something that is likely to go out of style quickly, "fad" items*
   - *essential items that you can't afford to buy at a higher quality level*
   - *items that have limited or temporary use*

5. What is the difference in price between a product at a convenience store and the price of a product at a major department store? Work this out as a percent.

   Convenience store prices are usually much higher than department store prices because they do not sell as high a volume of merchandise (unless the item is on sale). The percent mark-up may vary from 0% to 20% to 50%, depending on the store and the items.

6. What is the relationship between the quality of the product and the cost of the product?

   Usually the cost of the item will increase with an increase in quality. However, high prices don't always mean quality merchandise.

7. What expectations do you have of the product which costs less and is of lower quality?

   Don't expect a product which costs less and is of lower quality to last very long or to serve its purpose as well.

8. How do those expectations differ from the expectations you have for the product that costs the most?

   If an item costs more, you generally expect high quality. You expect that it will last a long time and be reliable and durable.

9. Should you always buy the most expensive *top-of-the-line* product? Why or why not?

   No, you should always buy high quality which isn't necessarily the most expensive product. You should also buy things to suit your purpose or need and that might not have to be top-of-the-line merchandise.

   You should also consider what you are going to use the product for, if the product is within your budget, and what features the product has.

10. Think about an item that you are considering to purchase. Use a home catalogue, or either telephone or go to your local stores. Find out how many different levels of quality there are for this item. Also find out what the range of prices is between each store and each quality.

    Answers will vary. The following things should be included in the answer:

    - *an item that the student is considering purchasing (paint brushes, skateboards, fabric, blank cassette tapes)*
    - *a range of qualities*
    - *a range of prices*

11. Do question 7 on page 121 of your textbook.

    Ultra White $2.95 for 150 mL
    $2.95/150 mL = $0.0197 per mL

    Kleen $1.15 for 50 mL
    $1.15/50 mL= $0.023 per mL

    Gleam $3.50 for 195 mL
    $3.50/195 mL= $0.0179 per mL

    Looking at dollar value, Gleam is the cheapest; however there are things that you do not know about the product:

    - *How much do you need to apply to the brush?*
    - *Is it a whitener, a cavity preventer, or a breath freshener? Does it fight plaque build up? Does it contain fluoride?*

Section 1: Activity 4

1. What is the issue?

   What kind of skates am I going to buy?

2. Give two more alternatives that you can think of.

   Possible answers:

   - *Buy the skates from a second-hand store.*
   - *Buy the least expensive skates.*

3. Can you think of any other sources of information?

   Possible answers:

   - *Talk to professional skaters.*
   - *Read books on skating.*
   - *Look in store catalogues.*
   - *Look at advertising and magazines.*
   - *Go to the library.*

4. Can you think of anything else that may influence your decision?

   Possible answers:

   - *How serious I am about skating?*
   - *Do any of the stores have skates on sale?*

5. Where do safety, durability and reliability, materials, and craftsmanship fit in?

   Possible answers:

   - *The skates have to be in good shape so I don't get hurt.*
   - *The skates should last throughout the season, if not longer.*
   - *I should be able to depend on the skates to serve their purpose.*

6. What alternative did you choose?

   Answers may vary.

   - *The best choice may be to borrow the skates, buy them second-hand, or according to the consumer product testing report, buy the White Lightning Skates for $82.*

7. What were your reasons for making that choice?

   Answers may vary depending on which alternative the student picked:

   - *might not like skating, therefore they borrowed or used second-hand skates*
   - *may have decided to save money for something else*
   - *bought new so they could be like their friends*
   - *instructor recommended those skates*

8. Why didn't you choose some of the other alternatives?

   Answers may vary depending on which alternative the student picked:

   - *skates were too expensive*
   - *couldn't find any used skates*
   - *instructor didn't recommend them*

9. Which store will most likely have the lower prices, a department store that sells a higher volume of merchandise or the small convenience store on the corner that sells less merchandise?

   A department store will likely have the lower price.

10. When would be the best time of year to get skates on sale?

    When the winter season is almost over, skates often go on sale.

11. How would the following view your decision and why?

    Answers will vary depending on which alternative they picked.

a. parents or guardians

- *They would be pleased that it didn't cost much and that things were being reused and not thrown away.*
- *They would be embarrassed that you had to borrow or buy second-hand.*
- *They wouldn't care because it's your money.*
- *They would be pleased that you made a good decision.*
- *They would be disappointed that you wasted your money.*

b. your friends

- *They would be happy because you could go skating with them.*
- *They would be impressed by your good judgement.*
- *They would be embarrassed by your bad decision making.*

c. the people who originally owned the skates

- *They would be pleased that they made the sale.*
- *They would be happy that their old skates were useful to someone else.*

12. How do you feel about the decisions you made, and why do you feel that way?

Answers will vary depending on which alternative you picked. A sample response follows:

"I feel great, I got the skates at a good price that pleases my family. I made the decision myself after careful planning."

13. What would you change if you had to make the same decision again? Give reasons for any change.

Answers will vary depending on which alternative you picked. A student may decide to change nothing or may pick a different alternative.

Reasons for a change may involve the following statements:

- *I felt I wasted by money because I do not enjoy skating after all.*
- *My friends laughed at me for deciding on used skates.*
- *My parents were upset because I did not use any consumer magazines.*

Section 1: Follow-up Activities

Extra Help

1. Read pages 108 and 109 in your textbook and do Activity 3-1, Considering Characteristics. Space is provided for your answers.

   Suggested answers follow.

   PART A

   Textbook question 1:

   You can determine the type of bread and who packaged it.

   Textbook question 2:

   You cannot determine whether the bread is fresh and what the bread will taste like.

   Textbook question 3. (a):

   When it is packaged, how it is packaged, the type of bread that it is, how long it is baked, and how it is made all affect freshness.

   Textbook question 3. (b):

   You could smell it, feel it, and check the best-before date on the package to help decide how fresh it is.

   PART B

   Textbook question 1:

   The characteristics of a car that would affect its effectiveness are the size of the car, the size of the engine, and the weight of the car.

   Textbook question 2:

   How much gas does it take to travel a kilometre? How large is the engine?

   Textbook question 3:

   Fill the gas tank, travel, fill the tank again, and record how much fuel was used. Divide the amount of gas by the number of kilometres travelled during the test.

PART C

Textbook question 1:

Characteristics of jeans are style, fit, colour, fabric, and stitching.

Textbook question 2:

Factors that affect the strength of the jeans are fabric and stitching.

Textbook question 3. (a):

The strength of the fabric or the stitching can be tested by pulling with measured amounts of force; how much force the fabric and stitching can withstand can be determined.

Textbook question 3. (b):

Which pair of jeans will I like better?

PART D

Textbook question 1. and 2:

Product	Most Important Characteristic	Test
Mattress	*Comfort*	*Lie on mattress for 10 min. and check for pressure zones.*
Vacuum Cleaner	*Suction power*	*See how well the iron-filings can be picked up.*
Instant Glue	*Strength*	*Glue two blocks of wood together. Then determine how hard it is to separate them.*

2. What types of helmets are available?

There are three types of helmets:

- *soft-shell helmets, made of plastic foam*
- *hard-shell helmets*
- *thin-shell helmets*

3. What useful information about each type of helmet is found in the newspaper article?

   - *Soft-shell helmets grip the pavement, putting stress on the neck. They are light weight and comfortable. Most kids have soft-shell.*
   - *Hard-shell helmets skid when they hit the pavement, reducing injury risk.*
   - *Thin-shell helmets provide the best of both designs, but they haven't been tested yet.*

4. Which type of helmet would you buy?

   Any of the three types of helmets can be chosen.

5. Explain why your choice is the right one.

   Soft-shell helmets can be chosen if the bike is used at low speeds or on dirt trails. Hard-shell helmets may be preferred by those riding on pavement at high speeds. Those that trust a new untested design may feel that the thin-shell helmet provides the most protection with the most comfort.

Enrichment

Make up a full page newspaper advertisement which would describe all the possible uses of tongue depressors. Plan your advertisement by first listing your ideas in point form.

Possible uses of tongue depressors:

- *tongue depressors*
- *craft projects*
- *mark new plants or rows in a garden*
- *make bird houses*
- *finger splints*
- *straight edge or ruler*
- *wrap string around it*
- *carve into bookmarks*

Full page ad should have the following characteristics:

- *colourful, bright, neatly coloured*
- *eye-catching, attractive*
- *easy to read*
- *correct spelling*

Section 2: How Did You Decide?

This section helps the student to recognize that product testing is an important part to the development of a product and to the final selection of a product for purchase by the consumer. Safety, reliability, and durability play a key role in determining whether or not a product will pass the test.

Section 2: Activity 1

1. Make a list of five items that you or your family have purchased over the years that eventually wore out or broke. Beside each item write down briefly how it failed.

   Answers will vary. Be sure students state what part wore out or broke (the handle, the legs) and not how it broke (someone dropped it).

   chair – back screws came undone
   chair – legs too weak, began to bend
   flashlight – the switch broke
   cupboard door – hinge screws came undone

2. Go back to the list that you developed in question 1, and indicate to the left of the item whether the failure was due to one or more of the following:

   Answers will vary, depending on which items are chosen. Reasons can be:

   - *poor choice of materials (M)*
   - *poor design (D)*
   - *poor craftsmanship (C)*
   - *poor user maintenance (UM)*

3. Can you think of three products in your house that haven't broken yet, but have weaknesses which indicate that they might break down?

   Answers will vary. Here are some examples: a chair with wobbly legs, a dish that has a crack in it, a door hinge loosening from the frame, soles of runners coming off, a cassette player which does not rewind any more.

4. Either write a *before* and *after* description of what you would change, or draw a *before* and *after* sketch.

   Answers will vary. Students should indicate a change in either materials, design, workmanship, or any combination of the three. It should be a change which will improve the item and still maintain its function.

   Example: soles of runners keep wearing out and coming off. The materials are easily worn by friction. You cannot use a lubricant to reduce friction because in order for the function to be the same, you need a good grip. Use a better type of rubber in the sole. Do not glue the sole to the shoe; make it all one piece.

5. In the space provided, write a business letter to the manufacturer of the product that has weaknesses. Describe how you redesigned the product to improve it, by changing either the materials, design, or workmanship.

   Answers will vary. The letter should be in business style, with correct spelling and grammar. It should have an introduction, body, and conclusion, with proper greetings and closings. The body should explain how you redesigned the product in a brief but clear manner. See example for format.

12345-67 Street
Any town, Alberta
A1B 2C3

Today's Date

The President
The Product's Manufacturer
12345-67 Avenue
Any city, Any Province
D4E 5F6

Dear Sir/Madame:

My name is Billie Jo Robbins and I am a grade 8 student. I received a pair of Super Sport Track Shoes (style number 1223) as a gift this past Christmas and have only worn them five times during my one hour track practices.

I have noticed that the sole of the runner is becoming separated from the remainder of the shoe. It seems that the adhesive is not binding anymore.

If I may make a suggestion to your company, I would recommend that you mold the sole to fit the shoe so that it is all one piece and then you won't have to use an adhesive at all.

I hope my comments are helpful to you. I will be awaiting your reply.

Sincerely,

Billie Jo Robbins

Section 2: Activity 2

1. Write down as many products as you can which are advertised through these methods.

   Answers will vary. Students can refer to particular brands of detergents or soft drinks for example.

2. What is the purpose of the testing?

   The purpose of the testing is to determine whether or not a particular new drug is effective in the prevention of cold sores.

3. Describe the test being conducted.

   Volunteer patients who suffer from cold sore outbreaks four or more times a year are given a medication to apply to combat the cold sores. They are then examined for three-day periods throughout the year. The test will run in all four seasons.

4. Is this a blind test? Explain.

   Yes, the volunteers do not know whether they are given the test drug, Zovirax, or some other medication.

5. Why must the test be conducted?

   It is a requirement of the National Health Policy Branch which licences new medications.

6. Who is funding the study?

   The study is being funded with a grant provided by the company which manufactures the drug.

7. Why is it necessary to have a blind test?

   It is necessary to have a blind test so that the results will be unbiased.

8. What are some problems that you think they will encounter?

   Finding enough volunteers, having the volunteers stay with the program the entire year, and monitoring how the volunteers apply the medication may be difficult.

9. Choose three variables that are listed in the middle of page 110. Describe how these variables would affect the results of a test if they were not kept the same during a test which involved different types of dishwashing liquid and different amounts of dishes cleaned.

   Possible answers:

   - *the size of the dishes: More tiny dishes will be cleaned than large dishes.*
   - *the shape of the dishes: Dishes with many tiny grooves or narrow bottle necks may be harder to clean than flat plates; therefore more suds will be used.*
   - *the material from which the dishes are made: If the dishes were made of paper, any dishwashing liquid would have problems getting them clean.*
   - *the amount, type, or distribution of grease: More suds are required to clean more grease.*
   - *the amount of dishwashing liquid: More liquid will clean more dishes.*
   - *the amount of water: Water is necessary to allow the food particles or grease to be moved away from the dish.*
   - *the temperature of the water: Grease can be removed more easily in hot rather than cold water; some detergents work better in a certain water temperature.*
   - *the type of cleaning implement: It may be necessary to scrub some dishes.*

Section 2: Activity 3

The following are needed for this activity:

- three pieces of different types of fabric such as cotton, wool, and nylon
  Each piece should be 10 cm square.
- laundry detergent
- hair dryer
- three 250 mL beakers or measuring cups
- three pieces of paper at least 10 cm square
- white paper
- stirring rod or spoon
- forceps or tongs
- ruler
- other things depending on a student's choice of investigation

1. Recall a time where one of these surprises happened to you or someone you know.

   Answers will vary. You bought something at a store and the clerk threw it into a bag without folding it; you came home wanting to wear your new shirt and it was all wrinkled. You decided to help out with the laundry and threw everything in together; the white shirts ended up being pink because of the red scarf that wasn't colourfast.

2. Record your data in the table.

Comparison of Fabric Samples			
Characteristic	**Fabric A**	**Fabric B**	**Fabric C**
crease resistance wind resistance colourfastness shrinkage	*Answers will vary according to the fabric tested. Even for a given fabric, answers may vary somewhat depending on the thickness of the weave. If available, the fabrics used for these tests should be of a heavy enough material to be suitable for jackets and should have a heavy colouration. Information on several fabrics follows. The table entries should agree with this information if these fabrics were chosen as fabric samples A, B, and C.*		

Cotton

- crease resistance: *poor unless treated to be permanent press*
- wind resistance: *depends on thickness of fabric, shirt weight is generally poor*
- colourfastness: *moderate (slight running of colour), fabric must be washed in cold water for there to be no running of colour*
- shrinkage: *little if fabric has been preshrunk, much if it has not been*

Nylon

- crease resistance: *good*
- wind resistance: *excellent (has been used in military parachutes)*
- colourfastness: *good (no running of colour)*
- shrinkage: *none*

Rayon

- crease resistance: *poor to moderate, depends on whether or not fabric was treated with a resin*
- wind resistance: *moderate*
- colourfastness: *excellent (no running of colour)*
- shrinkage: *little if resin treated*

Silk

- crease resistance: *good to excellent*
- wind resistance: *poor to moderate*
- colourfastness: *good (no running of colour)*
- shrinkage: *moderate (some shrinkage)*

Wool

- crease resistance: *good*
- wind resistance: *moderate (provides warmth due to good insulating qualities, but is often worn with other fabrics which resist wind)*
- colourfastness: *poor (running of colour); fabric must be washed in cold water for there to be no running of colour*
- shrinkage: *moderate to poor, especially if washed or dried at higher temperatures*

3. Using the three different fabrics, complete the following charts by drawing in the appropriate symbols in the correct colours.

Answers will vary depending on the type of fabric chosen. Here are some sample answers.

Type of Fabric: *100% acrylic knit*	
Procedure	**Symbol**
Washing	(*amber*)
Bleaching	(*red*)
Drying	(*amber*)
Ironing	(*red*)
Dry Cleaning	(*amber*)

Type of Fabric: *100% cotton (coloured)*	
Procedure	**Symbol**
Washing	(*amber*)
Bleaching	(*red*)
Drying	(*amber*)
Ironing	(*amber*)
Dry Cleaning	(*green*)

Type of Fabric: *65% polyester/35% cotton knit*	
Procedure	**Symbol**
Washing	(*amber*)
Bleaching	(*red*)
Drying	(*amber*)
Ironing	(*amber*)
Dry Cleaning	(*amber*)

Type of Fabric: *100% silk (coloured)*	
Procedure	**Symbol**
Washing	(*red*)
Bleaching	(*red*)
Drying	(*amber*)
Ironing	(*amber*)
Dry Cleaning	(*amber*)

4. What is the relationship between the type of fabric and the instructions for care?

   More delicate fabrics require gentle care. Example: Fabrics that are prone to shrinkage need to be washed in cold or warm water.

5. What would happen if you did not follow the instructions?

   The garment may not be as durable with repeated washings. Its appearance may change. Colours may fade and the material could shrink.

6. How do you think the manufacturer of the clothing found out what instructions to put on the label?

   By performing tests similar to the durability and utility tests the students performed, the manufacturer can find out what instructions to put on the label.

Comment:

For the next question it would be helpful if students had access to several consumer product testing magazines so that they could see how articles were set up.

7. Use Activity 3-6 on page 128 of your textbook as a guide to writing an article for a consumer magazine. Follow the six steps given for the procedure.

   Answers will vary greatly depending on the product and test chosen by the student.

   Procedure

   Textbook question 1:

   Answers will vary. A sample procedure is shown in Activity 3-5 on page 126 of the textbook.

   Textbook question 2:

   Answers will vary. Materials needed should be tested.

   Textbook question 3:

   Answers will vary. The chart could look like that given at the beginning of this activity when fabric characteristics were compared.

   Textbook question 4:

   There is no written answer for this part.

Textbook question 5:

Answers will vary. Results should be recorded.

Textbook question 6:

The magazine article should have

- *at least one paragraph that should be background information about the product*
- *at least one paragraph that should describe the tests carried out*
- *a chart showing the test results*
- *at least one paragraph interpreting the test results and making a recommendation as to which product is best and why*

Section 2: Activity 4

Comment:

Some students may not have any exposure to TV programs or movies. For them, Questions 5,6, and 7 cannot be done. For these students, you can discuss other products that have been marketed on a limited or local basis before being marketed on a larger scale. For example, a cheddar cheese factory can be set up with a minimum amount of equipment and staff to produce a small amount of cheese locally. If the cheese is popular, the factory can be expanded. Or the manufacturer may find that a marbled cheese is very popular and adapt the factory for that product. It should become clear from the discussion that manufacturers must find a way to learn about consumer acceptance of a new product and that consumer choices determine the activities of manufacturers. Besides limited marketing of a new product, manufacturers can allow a certain number of units to go out as samples. Then the sample users can be surveyed. Manufacturers can also do a large scale survey to see what people think about a product just based on a description of the product. Students should see that there are a variety of ways to find out in advance how well a product will do on the market.

1. Write down all the changes that have occurred in video games to make them more convenient and accessible. Be sure to include changes that have occurred in size and in how the games are powered.

   Answers may vary. Following are some examples:

- *Large games, about two metres high with large playing areas about one metre squared, cannot be easily moved.*
- *Table top games, operating on electricity or batteries or hooked up to a television set, could not be played without the TV.*
- *Table top games, with their own video screen, are operated by batteries or electricity.*
- *There are pocket-sized games operating on solar power.*

2. What would be some of the ways in which you could find out if consumers would buy a new product?

   Answers may vary. Here are some examples: do telephone solicitations, do door-to-door surveys, give away free sample products and then ask people's opinions of the product.

3. If you were the inventor of Instant Mashed Potato Flakes, what type of research would you do, and what kind of tests would you perform before you settled on one version of your product?

   Answers may vary. Here are some examples:

   - *Design a test that would check to see if the product had a long shelf life without its colour or flavour being affected.*
   - *Design a test to see if it would easily mold or decay.*
   - *Design a test to see if nutritional quality remained the same over time.*
   - *Design a test to see if there were any medical side effects to eating this product.*

4. Why would a company stop an invention from being developed? There are both good and bad reasons for doing this; include both in your answer.

   Answers may vary. Here are some examples:

   - *The product wasn't safe.*
   - *The product wasn't reliable or durable.*
   - *There wasn't enough money to continue with research.*
   - *It was a risk to the economy.*
   - *Other people would be out of work because of the invention.*
   - *It would not be competitive with existing products.*
   - *It wasn't an improvement of existing products.*

5. Name a television program that you recall seeing a pilot for.

   Answers are numerous; almost all prime-time shows started out as a pilot during the previous season.

6. Name one television program that was a spin-off of a highly-rated program.

   Answers may vary. Here are some examples:

   - *"A Different World" was developed from "The Cosby Show."*
   - *"Empty Nest" was developed from "Golden Girls."*
   - *"Just the Ten of Us" came from "Growing Pains."*

7. Look in a local newspaper in the Entertainment section. List one of the movies that has had the longest running time.

   Answers may vary. Here are some examples of long running shows from the past:

   - ***E.T. – The Extra-terrestrial***
   - ***Star Trek*** *(any sequel)*
   - ***Back to the Future*** *(any sequel)*

Section 2: Follow-up Activities

Extra Help

1. Tell how accelerated aging is used to test a camera.

   Two thousand pictures are taken one after the other to test whether cameras of the same type will have shutter mechanisms that will last for several years of normal use.

2. How can recurring problems with a product be identified?

   A consumer survey can be used to identify recurring problems with a product.

3. Do the following questions from page 121 of your textbook.

   Textbook question 5:

   No, it was not a fair test because two of the types of sugar tested were granular and one was packed into a cube, which makes a difference. Melanie introduced another variable into the test which should have been controlled.

Textbook question 6. (a):

The following are indicative of some trouble spots.

table	• *where the legs attach* • *the corners (being worn)*
lamp	• *the light switch* • *the electrical cord and plug*
umbrella	• *the switch that holds it open or closed* • *the rods that hold the fabric open*

Enrichment

Answers will vary. Here are some examples:

- *The bicycle went from the Pennyfarthing (that had a very large front wheel and a small back wheel) to the light weight bikes we have today.*
- *The pre-recorded music disc has graduated from a cylinder to a thick record to a thin, vinyl record. Now compact discs use a laser to play the music (not only that, but music can also be recorded on tapes).*
- *The hair dryers used to be a chair and hood that released hot air. Now there are also portable hair dryers.*
- *Ovens changed from wood stoves, to gas and electric models, to convection ovens and microwaves.*
- *Diapers have changed from cloth diapers to disposable diapers and now both cloth and disposable are used.*
- *Computers changed from ones that filled a room to laptop models.*
- *Fabric used to be made only from natural fibres. Now the use of synthetic fibres is common.*

Some changes have improved the life-style and health of human population, others have created environmental problems through excessive packaging and the wasting of resources.

Section 3: Who Sets the Standards?

This section helps the student to recognize that product standards are an important part in the development of a product. Consideration of safety, reliability, and durability plays a key role setting standards for consumer products.

Section 3: Activity 1

1. What would happen if you didn't get it repaired?

   Answers may vary. Here are some examples:

   - *The appliance may no longer work.*
   - *It could cause a fire.*
   - *It could give someone an electrical shock.*

2. Think of at least five questions you think an inspector would ask, regarding a compact hair dryer, before it was given the Canadian Standards Association stamp of approval?

   Answers may vary. Here are some examples:

   - *Could hair catch on fire?*
   - *How durable is the switch?*
   - *What would happen if the users' hands were wet? Would they get a shock?*
   - *Does the cord have a swivel attachment?*
   - *Are the different heat settings reliable?*

3. What three types of tests would you perform on an electric clothes iron before you approved it for sale to consumers?

   Answers may vary. Here are some examples:

   - *Test for safety, durability, and reliability.*
   - *Test to make sure it doesn't give a person an electrical shock.*
   - *Test to see how long the heating elements will function.*
   - *Does it have an automatic shut off for protection against overheating?*
   - *Does it shut off automatically if left in a horizontal position for a long period of time?*

4. Look for CSA labels on the electrical appliances that you have at home and complete the Probing question on page 131 of your textbook. Write your answer in the space provided. (Use a listing rather than drawings to identify the labels.)

   Several electrical products have CSA labels. Here is a partial list: computers, radios, TVs, cassette players, fridges, stoves, coffeemakers, toasters, extension cords.

   Not all labels have the same amount of information on them. Most include: the manufacturer's model number, the electrical requirements, any warnings about use (do not immerse in water), the CSA approval number, and a description of the product.

   If there were no safety standards, any type of product could be sold and it would be up to the consumer to find out which ones were safe and which weren't.

   If you could not rely on the information that was on labels, you would not know if a product was what it claimed to be.

5. Choose an electrical appliance that you might have at home, maybe a toaster, blender, vacuum cleaner, or coffeemaker. Name all the different parts that make up its design. For each part, tell what you would test it for.

   Answers may vary. Here is an example of toaster parts and what they should be tested for:

   - *electrical cord and plug: securely attached and can carry the current without overload, properly grounded*
   - *spring chamber: durable*
   - *heating elements: reliable and durable*
   - *temperature control: accurate, reliable, and durable*
   - *cleaning tray or door: stays closed when toaster is in use, easy to clean*
   - *outer casing: resistant to heat, durable*

Section 3: Activity 2

1. Take a look inside your cupboard and make a quick list of the features that appear on a cereal box.

   For food product packaging and labelling the following must appear on the label in both French and English:

   - *the common name of the food*
   - *the net quantity of the food*
   - *the name and address of the person responsible for the product*
   - *the list of ingredients (from greatest to least amount)*
   - *the durable life date ("Best before," "Use by," expiration date)*
   - *storage instructions*

   In addition to the previous information, the following features may also be seen:

   - *suggested servings*
   - *recipes*
   - *enticing words*
   - *appealing colours*
   - *cardboard, metal, or plastic containers*
   - *excessive amounts of packaging*

2. Look back at the list you made in question 1; check off which features match up with the first four functions previously listed.

   Answers may vary. Here are some examples:

   - *the common name of the food*
   - *the net quantity of the food*
   - *the name and address of the person responsible for the product (indirectly serves the function of informing about the contents by increasing the credibility of the information)*
   - *the list of ingredients (from greatest to least amount)*
   - *the durable life date ("Best before," "Use by," expiration date)*
   - *storage instructions*

3. List which features match up with the function of attracting the consumer to buy.

   Answers may vary. Here are some examples:

   - *suggested servings*
   - *recipes*
   - *enticing words*
   - *appealing colours*
   - *excessive amounts of packaging*

4. Manufacturers of consumer products must make sure that the labels and advertising are consistent with what the product is. See if you can guess what product these ingredient labels are describing.

   a. beans, water, sugar, tomato paste, pork, salt

      beans with pork

   b. milk solids, cream, sugar, glucose, powdered whey, guar gum, mono- and di-glycerides, carboxymethyl cellulose, carrageenan, polysorbate 80, artificial flavour, colour

      vanilla ice cream

   c. noodles, salt, sugar, chicken fat, vegetable shortening, onion, hydrolyzed plant protein, spices, dextrose, monosodium glutamate

      chicken noodle soup

   d. sugar, citric acid, artificial grape flavouring, ascorbic acid, colour, acetic acid

      grape drink crystals

   e. peanuts, vegetable oil, mono- and di-glycerides, salt

      peanut butter

   f. rolled oats, brown sugar, sweet chocolate chips (sugar, chocolate liquor, cocoa butter, lecithin, vanilla extract), rolled whole wheat, dehydrated marshmallows (sugar, glucose, food starch gelatin, sodium hexametaphosphate, artificial and natural flavours, colour), coconut oil, glycerin, graham cracker crumbs (enriched flour, glucose, graham flour, vegetable oil, sodium bicarbonate, salt, whey powder, honey), dried sweetened coconut, vegetable oil, skim milk powder, sorbitol, whey powder, honey, salt, natural and artificial flavours, BHA, citric acid

      granola bars with marshmallows and chocolate chips

g. corn syrup, sugar, water, gelatine, artificial flavour, vanilla extract, sodium hexametaphosphate

marshmallows

h. sugar, modified and hydrogenated palm, vegetable and coconut oils, glucose, coconut oil, chocolate, modified milk ingredients, peanuts, flour, condensed milk, cocoa butter, sorbitol, salt, glycerin, yeast, soya lecithin, citric acid, sodium bicarbonate, calcium sulphate, ammonium chloride, potassium bromate, natural and artificial flavour, artificial vanilla extract, colour

chocolate bar with peanuts

5. Look at some of the products found in kitchen cupboards. Read the label in order to answer the following.

Answers may vary. Here are some examples:

a. What words and colours are used to make the label persuasive?

colour of label: bright yellow and orange
suggestive words: new, improved, fantastic, super, rich, creamy, smooth

b. What instructions for preparation are given?

Instructions for preparation:

- *how to make chicken noodle soup*
- *spray 10 cm away*

c. What recipes are given?

Recipes:

- *how to make chocolate chip cookies*
- *how to make rice crispy squares*

d. What ingredients are listed?

Ingredients:

- *corn syrup, sugar, water, gelatine, artificial flavour, vanilla extract, sodium hexametaphosphate*

e. Do any warning messages appear?

Warnings:

- *keep away from skin and eyes*
- *poison*
- *not suitable for children under five years old*

f. What kind of nutritional information can be found?

Nutritional information:

- *amount of protein, fat, carbohydrates, vitamins, calories*

g. What variation was there in size, shape, and type of packaging?

Size, Shape, and Type of Packaging:

- *large and small*
- *cylindrical metal cans*
- *rectangular cardboard boxes*
- *rectangular plastic bags*

h. Was there any instance of too much packaging? If so, tell about it.

Use of too much unnecessary packaging:

- *individually wrapped cookies or snacks*
- *lunch box servings*

6. Pick a food product that has unusually busy labelling. Redesign the packaging so that only the information required by law is shown. Make a drawing of the product in the packaging as you have designed it.

The following is all that is required by law and these should appear in the drawing.

- *the common name of the food*
- *the net quality of the food*
- *the name and address of the person responsible for the product*
- *the list of ingredients (from greatest to least amount)*
- *the durable life date ("Best before", "Use by", expiration date)*
- *storage instructions*

7. What is another reason why they are less expensive?

   Manufacturers of generic products do not have to spend so much on advertising and packaging frills

8. Take a guess and see if you can match the following Acts with the standard they uphold.

   D Hazardous Products Act
   C Consumer Packaging and Labelling Act
   A Fish Inspection Act
   F Textile Labelling Act
   B Weights and Measures Act
   E Food and Drug Act

9. Give one advertising claim that would be hard to test.

   Claiming that a product is good for you is hard to test.

Comment:

The next question involves analysing advertisements. The emphasis here is not on getting the right answers; this question is to promote discussion in order to encourage students to deal with advertisement in a critical manner. Students should see that most advertising statements are not testable and are therefore not factual. Such statements cannot be used to determine the quality of a product.

10. Refer to page 139 of your textbook. Do the following from that page.

    Procedure

    Textbook question 1:

    Refer to your advertisements as Ad#1, Ad #2, and Ad #3. Tell where each advertisement was seen or heard.

    Answers should indicate whether the ads were seen on TV, heard on the radio, or seen in a magazine or newspaper. Answers will vary.

    Textbook question 2:

    Facts may include the name of the product, how the product is used, scientific statements, or test results. Answers will vary.

Textbook question 3:

The age and gender of the people in the ad may be the same as those who are expected to use the product. Or the people in the ads may be youthful to add appeal to the product. Sometimes famous people are shown to make the product attractive. People shown are usually having fun and have many friends. Sometimes they are shown to be happier after using the product. Often the action is a leisure activity taking place outdoors. Answers will vary.

Textbook question 4:

Answers will vary. Statements like "Test studies prove..." may be made. Statements that appear to be scientific can be made: "Recommended by doctors and dentists."

Finding Out

Textbook question 1. (a):

Sometimes, it depends on what is being advertised.

Textbook question 1. (b):

Talk to sales clerks, professionals, and friends. Read consumer magazines and product instructions.

Textbook question 2. (a):

Sometimes, it depends on what is being advertised.

Textbook question 2. (b):

Blind taste test and scientific tests may be used.

Textbook question 2. (c):

Generally, filming conditions and scripts make the competing product look unappealing.

Textbook question 3. (a) (b):

The people in the ad are usually of the same sex and age group that would buy the product.

Textbook question 4:

This depends on what the product is. If at all possible, the setting is usually outdoors instead of indoors, and the weather is most often great. Settings are used to create a mood or feeling that you can relate to or would like to be part of.

Textbook question 5. (a):

Often performance claims are very vague.

Textbook question 5. (b):

It is difficult to test such claims; they appeal more to the emotions than to the quality and use of the product. Statements that do not have data, e.g., percentages, are harder to test.

Textbook question 5. (c):

Answers will vary depending on the product chosen. Here is an example:

A claim on a package of granola bars says that they taste like S'mores. This can be tested as follows:

- *Make some S'mores and then set out the granola bars.*
- *Set up a taste panel and asks volunteers to compare the taste.*

Section 3: Activity 3

1. What were the consequences of your decision?

   Answers will vary. Here are some examples:

   - *A poor grade was given.*
   - *The product tasted terrible.*
   - *The bookcase was wobbly.*
   - *The bike tire blew up.*

2. Do Activity 3-8, Safety First, in your text on page 133. Space has been provided for your sample set of instructions on the safe use of a bicycle.

   Answers will vary but should include two key points: how to use a bicycle properly (how to ride, where to ride, traffic laws) and how to properly maintain the bike (tires, brakes, chains, rims, gears).

3. Write your own set of instructions for one of the following: a kitchen knife, an electric stove, a pair of scissors, or another item of your own choice. Make sure your instructions include information about maintenance of the product, proper operation of the product, and indication of who can use the product (age range).

   Answers will vary. Here is an example for a knife:

   - *Always keep the knife very sharp; dull blades cause accidents.*
   - *Keep the blade clean and dry after each use.*
   - *Store it in a safe place; a knife rack is preferable to a crowded utensil drawer.*
   - *Use the proper size knife to get the job done; do not use a butcher knife to peel vegetables.*
   - *Always cut away from yourself.*
   - *Use a cutting board; do not cut into your hand.*
   - *Young children should not be using knives.*

Section 3: Activity 4

1. Write down some of the warnings, or sketch the pictures that represent the warnings.

   Answers may vary. Some examples are poison, explosive, flammable, corrosive, keep away from children, and do not immerse in water.

2. Do question 3 on page 152 of your textbook.

   Textbook question 3. (a):

   danger, poison

   Textbook question 3. (b):

   warning, flammable

   Textbook question 3. (c):

   danger, explosive

   Textbook question 3. (d):

   caution, corrosive

3. List several products in your home that had a symbol to indicate possible danger.

   Answers will vary. Some examples are paint thinner, solvents, spray cans, and battery acid.

Section 3: Follow-up Activities

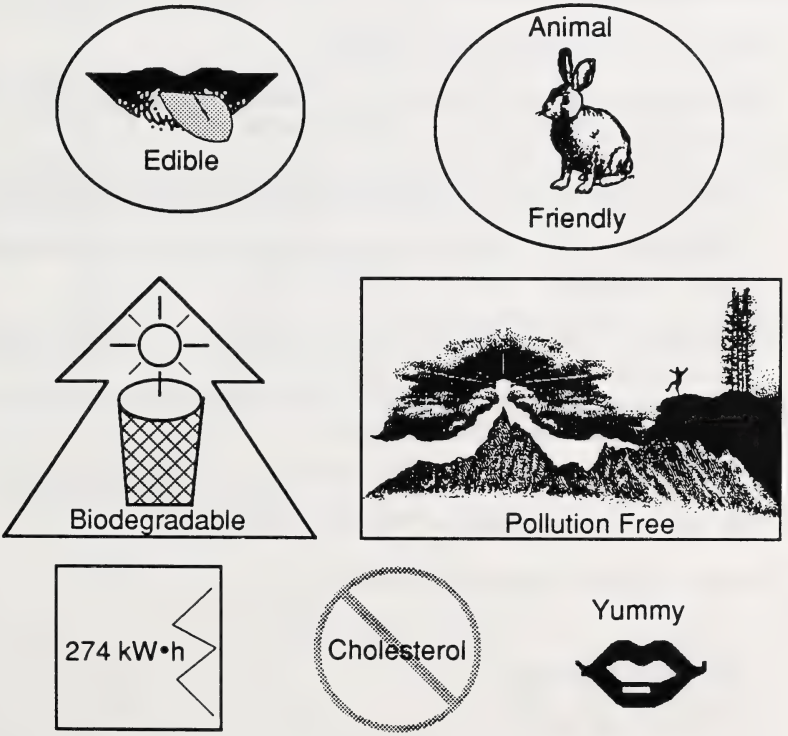
Extra Help

1. *D*
2. *A*
3. *E*
4. *B*
5. *H*
6. *C*
7. *G*
8. *F*

Enrichment

In Activity 4 you looked at warning symbols that act as visual cues for people to tell them of the particular dangers of a product. Draw visual cues of your own to tell consumers about some of these product characteristics: edible, biodegradable, cholesterol free, testing of the products has not harmed animals, pollution free, amount of energy used to make this product (your symbols may include words).

Answers will vary. You should be able to tell what message the drawing is trying to portray without being told what it is. Drawings should be simple.
Here are some examples:



Section 4: What Is the Impact?

This section helps the student to discover the alternatives and implications involved in the purchase o consumer products. Students look at the impact production, use, and disposal of consumer products have on the environment.

Section 4: Activity 1

1. Make a list of things that you have wanted but could not have or do because of your age.

   Answers will vary. Here some examples:

   - *having later bedtime or curfew*
   - *being able to watch certain movies*
   - *going to a certain place without an adult*
   - *playing with certain toys*
   - *using alcohol, cigarettes, coffee, tea*
   - *being able to help out with certain chores*
   - *being able to have a job outside of home*

2. Take a look at some of the over-the-counter medications that you may have at home. List the names of three medications and the warnings they have for the consumer.

   Answers will vary. Here are some examples:

   - *Some cough medicine will indicate that the medication will cause drowsiness and also that people with high blood pressure, diabetes, thyroid, or heart disease should not use the product*

   - *Some sinus medications will caution against their use if the person taking the medication is under 12, elderly, pregnant, or nursing, or has high blood pressure, heart disease, diabetes, thyroid disease, glaucoma, depression, enlargement of the prostrate gland, other significant disease conditions, or is taking other medication.*

   - *Some antacids (those containing ASA) have this warning: Consult a physician before taking this medication during the last 3 months of pregnancy, when nursing, or if you are on a sodium (salt) restricted diet. A physician should be consulted before giving this medication to children or teenagers with chicken pox or influenza.*

3. What do you think you should do with expired medication?

   Answers may vary. Here are some examples:

   - *Do not use it.*
   - *Take it to the pharmacy.*
   - *Flush it down the toilet.*
   - *Throw it in the garbage.*

4. What type of health or safety problems could occur with cigarettes, spray paint, and oven cleaner if they are used or misused? (The warnings that appear on the labels may tell you about these problems.)

   Cigarettes have a warning from the Surgeon General stating that smoking causes lung cancer, heart disease, emphysema, and may complicate pregnancy.

   Products such as oven cleaners and spray paints must always be used in a well-ventilated area, otherwise you could become poisoned by the toxic vapours. These products must also be stored at a cool temperature because the containers will explode if they become heated.

5. Can you think of three restrictions or limits that are set to ensure the safety of others on bridges and roads?

   Tunnels and bridges that have a canopy have height restrictions which will only permit certain sized vehicles. Many times drivers of large vehicles have forgotten to read warning signs and have become stuck at the entrance of a bridge.

   Some roadways do not allow heavy vehicles to travel on them because it will cause the pavement to buckle and become rutted.

   Some roadways are marked as Dangerous Goods Routes. Vehicles transporting such goods may only use these roadways.

   Speed limits are set for all roadways.

6. Can you think of some services or goods available to the consumer for which there are limits to the number of people allowed in at any one time?

   Answers may vary. Here are some examples:

   - *Your family car has a restriction on how many passengers and how much weight it can carry and still be safe.*
   - *Elevators in large buildings have load limits for the number of passengers they can carry.*
   - *Theatres and halls limit the number of people who can be in the building so that they can safely and quickly escape should a fire start.*

7. List at least two health and safety problems that occurred with the development of high-speed automobiles. Write down how technology solved the problem.

   Answers may vary. Here are some examples:

   - *Greater injuries with impact collisions resulted in the development of seat belts and air bags.*
   - *Occupants getting trapped in a vehicle because the metal has been crushed resulted in the development of the Rescue Workers' Jaws of Life.*
   - *Tires have been improved so that a vehicle does not become uncontrollable due to a blow out.*
   - *When brakes are applied, a vehicle can get into a skid and collide with oncoming traffic. Anti-lock brakes prevent skidding and the resulting steering loss.*

Section 4: Activity 2

1. Make a before and after drawing of a forest like the one described.

   Drawings will vary. Here is a description of what you may see:

   - *Before: lush green forest, signs of animal life, a variety of plants*
   - *After: signs of erosion, very few trees present, little animal life*

2. Given the preceding information, list three improvements that could be made in the pulp, paper, and forest industries?

   Answers will vary. Here are some examples:

   - *increase the number of trees replanted*
   - *use more recycled paper, instead of making new*
   - *find an alternate method of bleaching paper, or do not bleach it*
   - *protect wildlife sites, leave some habitats free from logging practices*

3. Do Activity 3-11, Making a Pen, on pages 144 and 145. Answer the following.

   Procedure

   Textbook question 2. (a):

   $0.0069 + 0.0015 + 0.0019 + 0.0015 + 0.0054 + 0.0022 + 0.0026 + 0.0022 = 0.0242$

   It takes 0.0242 kW•h to make and assemble the cap.

Textbook question 2. (b):

0.0138 + 0.0015 + 0.0010 = 0.0163

It takes 0.0163 kW•h to make and assemble the barrel.

Textbook question 2. (c):

0.0081 + 0.0003 + 0.0040 + 0.0031 + 0.0032 = 0.0187

To make and assemble the refill takes 0.0187 kW•h.

Textbook question 3:

0.0242 + 0.0163 + 0.0187 + 0.0064 = 0.0656

The total energy to make and assemble the pen is 0.0656 kW•h.

Textbook question 4. (a):

Add the energy for the seven parts made out of metal: 0.0217 kW•h.

Textbook question 4. (b):

Add the energy for the four parts made out of plastic: 0.0249 kW•h.

Textbook question 5:

Add the energy for the six assembly steps: 0.019 kW•h.

Finding Out

Textbook question 1. (a):

It takes more energy to make the parts of the pen than to assemble the pen.

Textbook question 1. (b):

There are more steps involved in making each part. The necessary materials must be found, prepared, and molded.

Textbook question 2. (a):

Plastic parts require a little more energy to make than metal.

Textbook question 2. (b):

The barrel is a relatively large part and it is plastic.

Finding Out More

Textbook question 3. (a):

Take the total energy used to make one pen (0.0656) and multiply it by 3000. The result is 196.8 kW•h. In one hour, 198.8 kW•h of energy is used.

Textbook question 3. (b):

In eight hours, (196.8 kW•h) (8) = 1574.4 kW•h of energy is needed.

Section 4: Activity 3

1. What would be three of the products that you have in your home now that you would take back with you?

   Answers will vary. Here are some examples:

   - *electricity*
   - *television*
   - *video games*
   - *computers*
   - *radio*
   - *tapes, cassettes, CDs*
   - *medicines, vaccines*
   - *pizza*

2. What type of impact do you think the products would have on the people, the environment, and society?

   Answers will vary. Here are some examples:

   They would have no impact on the society because none of it would work without electricity. You wouldn't get anything on the TV or radio because there wouldn't be anyone transmitting broadcasts. The people would be very suspicious of you, wondering where you got such strange stuff. Since you would be unable to use any of it, it would be thrown away; an early start to pollution.

   If you were able to explain yourself well, you may be able to convince the pioneers that you are from the future. You could talk to some of the more scientifically inclined pioneers and perhaps produce more of the items that you brought back with you. You could speed up technology so that even more advanced inventions could be made. Because you know about all the environmental problems that we have today, you could redirect the pioneers to a more environmentally friendly product.

3. What would your great-grandparents have used instead of these products? You will be able to find the answer by either talking to some older people or by thinking of things that environmentalists are trying to promote.

   Answers will vary. Here are some examples:

   a. plastic grocery bags: *cloth bags or wooden boxes*
   b. disposable diapers: *cloth diapers*
   c. oven cleaner: *steel wool and "elbow grease"*
   d. detergents: *made their own soap*
   e. car: *walked, biked, horse and buggy, mass transportation (trains and buses)*
   f. herbicides for garden: *weeding by hand*
   g. chemical fertilizer: *manure, compost materials*

4. Depending on what the source was, label the item as either non-renewable (*N*) or renewable (*R*).

   a. plastic wrap *N*
   b. cotton shirt *R*
   c. rubber tire *N*
   d. paper plate *R*
   e. pop can *N*
   f. wooden furniture *R*

5. Which of the items listed previously can be reused or recycled?

   All of them can be reused or recycled, as long as the service is available.

6. Create one logo to identify a product made from non-renewable resources and another logo to identify a product made from renewable resources. Draw your design in the space provided.

   Answers will vary. The design should be simple and easily recognizable. You should be able to tell what the logo represents without being told.

7. Do Activity 3-12, Waste Not, Want Not, on page 148 of your textbook. It asks you to be creative and think of what you could make with items that have been discarded. Space has been left for you to make the poster or the report and to answer the Finding Out questions.

   Reports on posters will vary. The student may either write out their idea or draw it in the form of a poster. Students should show how their new product is made from the discarded product.

   Here are some examples of how discarded items can be reused or recycled:

   - *Glossy magazines can be used to make roofing shingles.*
   - *Glass bottles can be used to make more glass bottles and stucco chips for houses.*
   - *Egg cartons can be used for craft projects.*
   - *Plastic cottage cheese cartons can be used as flower pots.*
   - *Metal wagons can be used to make flower planters.*
   - *Skateboard wheels can be used as castors to help move objects.*
   - *Buttons maybe good as bingo markers or checker pieces.*

   Finding Out

   Textbook question 1. (a):

   Discarded products are usually readily available and provide an inexpensive source of material.

   Textbook question 1. (b):

   Discarded products may have unwanted parts and impurities that are difficult to remove. Materials from discarded products may be worn or be weakened due to repeated bending.

Section 4: Activity 4

1. Think about the last five things you threw in the garbage. Write down what the item was and the reason why you threw it out.

   Answers may vary. Here are some examples of things that are thrown out:

   note paper, gum wrapper and eventually gum, table scraps, cardboard packaging, plastic wrap, apple core
   Students should also indicate the reasons for throwing the objects away.

2. What happens to the garbage you throw out? (You may have to phone your local municipal government office to find out, e.g., if you live in a town you would phone the town office.)

   Answers will vary.

   The garbage thrown out may go to a municipal landfill site or incinerator. If the student lives in the country the garbage may be thrown onto a garbage heap or may be burned right on the property on which the student lives.

3. Think of one harmful effect that your garbage may have on the environment.

   Answers will vary.

   If the garbage is burned or incinerated the carbon dioxide will contribute to the greenhouse effect. If the garbage goes to a landfill site or is put on a heap there may be more groundwater contamination. Also, when garbage is buried or piled, valuable land is used up.

4. Name four ways that you can cut down on the amount of garbage that you have in your home. Hint: Some of the ways may involve how you shop.

   Answers will vary. Here are some examples:

   - *Buy products that do not have so much excessive packaging.*
   - *If products must be packaged, look for packaging that is biodegradable.*
   - *Recycle and reuse containers.*
   - *Do not buy products from manufacturers who are not environmentally aware.*
   - *Have a composter for food and yard scraps.*
   - *Take your own shopping bags or boxes to carry items that you have purchased.*
   - *Buy in bulk to reduce the packaging.*

Section 4: Activity 5

You will find the 1990 issues No.6 and No.6/7 of ***Canadian Consumer*** *to be a useful resource for this activity.*

1. Which would you choose?

   Either cloth diapers or disposable diapers may be chosen.

2. Which did your parents choose for you?

   The student's parents may have used cloth diapers or disposable diapers.

3. Compare the two alternatives of using disposable diapers and using cloth diapers.

   a. Compare the alternatives from a parent's personal point of view. No environmental concerns are to be considered.

      Cloth diapers take time, effort, electricity, and detergent to launder. The laundry must be done frequently when using cloth diapers. Disposable diapers, on the other hand, are irritating to sensitive skin. Disposables are also expensive. The advantages of using disposables are that the baby does not have to be changed as often and soiled diapers can be disposed of directly after use. There is no smelly, germ-laden mess to carry around when away from home.

   b. Compare the alternatives from an environmental point of view that a parent may have.

      Cloth diapers take less energy to produce. Disposable diapers cause extra garbage and take up extra space in the landfill. Disposables do not decompose easily and release toxic substances and carbon dioxide when burned. Disposables require many trees to be cut down for the paper needed to make the diapers.

4. If you had to make this decision now, what would you choose and why?

   Answers may vary. Student will make a choice between cloth or disposable. Reasons should be based on the comparisons made in question 3. Hopefully, students give weight to environmental concerns.

5. Make an illustration that could be displayed at your local supermarket which would show the facts about disposable and cloth diapers. If you have poster paper, you may use it for your illustration. Otherwise use the space provided.

   Illustrations will vary. Here are some guidelines:

   - *Use plenty of colour and clear simple pictures.*
   - *The facts about disposable and cloth diapers as per the reading should be displayed in a clear concise manner.*

6. Make a list of products that are in your home that are harmful to the environment.

   Answers will vary. Here are some examples:

   disinfectants, oven cleaners, aerosol sprays, disposable diapers

7. From your list, name some products that could be replaced by an alternate, less harmful product.

   Answers will vary. The following apply:

   - *Aerosol spray cans be replaced by cans with an air pump mechanism.*
   - *Cloth diapers can replace disposable ones.*
   - *Chrome cleaners can be replaced by rubbing alcohol.*
   - *Toxic household cleansers can be replaced by ammonia, vinegar, and baking soda.*
   - *Detergents containing phosphates may be replaced by phosphate free detergents.*

8. Can you think of a better alternative to polystyrene cups?

   Glass would be the best alternative because it is reusable and recyclable. Plastic and paper are other alternatives, both are recyclable.

9. What ethical reasons might there be for not buying certain cosmetic products?

   Animals may be used in the testing of the product. The test may cause suffering.

Section 4: Follow-up Activities

Extra Help

1. What would be an advantage and a disadvantage to taking the shortcut through the ravine?

   Answers may vary. Here are some examples:

   - *advantage: You may not be late.*
   - *disadvantage: You could be hurt and you disobeyed your parents.*

2. What would be the consequences of purchasing an aerosol hair spray that is not environmentally friendly?

   It will harm the ozone layer. Without the ozone layer in place, more harmful ultraviolet light comes through the atmosphere.

3. What action would the manufacturers take if no one bought their product?

   They may lower the price, redesign the product, or take it off the market.

Enrichment

In the space provided, write letters to the two sources of information given to you. The letter to the Humane Society is to request information about the ingredients found in cosmetics and to find out if animal testing is involved in some cosmetics you use. The letter to the Canadian Council on Animal Care is to ask for general information about the use of animals in the development and manufacturing of products.

Remember to use the business letter format that you used earlier in this module.

Answers will vary but the letter should be courteous and written in the business letter format. Refer to the example of the business letter earlier in this module.

Comment:

You may have students recopy their letters onto stationery paper and have them mailed.

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as an individual item.

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